What is claimed is:

1. An inverse cyclotron energy converter comprising

first and second electrodes forming a tapered cylindrical cavity, the electrodes being in spaced relation forming first and second elongate gaps there between,

a magnetic field generator extending about the first and second electrodes, and

an ion collector positioned at one end of the first and second electrodes.

2. The converter of claim 1 further comprising an electron collector positioned adjacent another end of the first and second electrodes.

3. The converter of claim 2 wherein the electron collector is annular in shape.

4. The converter of claim 3 wherein the electron collector and ion collector are electrically coupled.

5. The converter of claim 1 further comprising a tank circuit coupled to the first and second electrodes.

6. The converter of claim 1 wherein the magnetic field generator comprises a plurality of field coils extending about the first and second electrodes.

7. The converter of claim 1 wherein the first and second electrodes are symmetrical.

8. An inverse cyclotron energy converter comprising

first and second electrodes forming an elongate cavity, the electrodes being in spaced relation forming first and second elongate gaps there between, and adapted to form a dipole electric field, and

a magnetic field generator extending about the first and second electrodes.

9. The converter of claim 8 further comprising

an ion collector positioned at first end of the first and second electrodes, and

an annular shaped electron collector electrically coupled to the ion collector and positioned adjacent a second end of the first and second electrodes.

10. The converter of claim 8 further comprising a tank circuit coupled to the first and second electrodes.

11. The converter of claim 8 wherein the magnetic field generator comprises a plurality of field coils extending about the first and second electrodes.

12. The converter of claim 8 wherein the first and second electrodes are tapered.

13. The converter of claim 8 wherein the first and second electrodes are symmetrical.

14. The converter of claim 8 wherein the first and second electrodes are hemi-cylindrical.

15. An inverse cyclotron energy converter comprising

a cylindrical vessel,

two hemi-cylindrical electrodes forming a tapered cylindrical surface of the vessel and in spaced relation to form a gap between adjacent sides of the electrodes,

first and second magnetic field generators,

an electron collector interposing the first and second magnetic field generators and adjacent a first end of the electrodes, and

an ion collector positioned adjacent a second end of the electrodes.

16. The converter of claim 15 further comprising a resonant circuit coupled to the electrodes.

17. The converter of claim 15 further comprising a tank circuit coupled to the electrodes.

18. The converter of claim 15 wherein the electron collector is annularly shaped.

19. The converter of claim 15 wherein the first and second magnetic field generators comprise annular field coils disposed about the vessel, wherein the field lines of the magnetic field generated by the field coils of the first magnetic field generator run in a direction opposite to the field lines of the magnetic field generated by the field coils of the second magnetic field generator.

20. The converter of claim 15 wherein the electron collector and ion collector are electrically coupled.

21. The converter of claim 15 wherein the electrodes are symmetrical.

22. A direct energy converter comprising

a vessel,

a means for forming a dipole electric field having two poles disposed within the vessel, and

a means for forming a magnetic cusp coupled to the vessel.

23. The converter of claim 22 wherein the means for forming the electric field comprises a two partially cylindrical electrodes.

24. The converter of claim 23 wherein the electrodes are symmetrical.

25. The converter of claim 23 wherein the electrodes are semi-cylindrical.

26. The converter of claim 23 wherein the electrodes are in spaced relation with one another forming a gap between adjacent sides of each electrode.

27. The converter of claim 22 wherein the means for forming a magnetic cusp comprises first and second sets of field coils disposed about the vessel.

28. The converter of claim 27 wherein the first and second magnetic fields generated by the first and second sets of field coils have oppositely running field lines.

29. The converter of claim 28 further comprising an electron collector disposed about the vessel in a magnetic cusp region adjacent a first end of the means for forming the dipole electric field..

30. The converter of claim 29 wherein the electron collector is annularly shaped.

31. The converter of claim 29 further comprising a ion collector disposed adjacent a second end of the means for forming the dipole electric field.

32. The converter of claim 31 wherein the ion collector is disposed within the vessel.

33. The converter of claim 22 further comprising a resonant circuit coupled to the means for forming a dipole electric field.

34. The converter of claim 22 further comprising a tank circuit coupled to the means for forming a dipole electric field.

35. The converter of claim 31 wherein the electron collector and ion collector are electrically coupled.